

### Patent Claims

1. Tool for the production of cast components, in particular gas turbine components, from reactive nonferrous molten metals, in particular from titanium alloys, wherein the tool is formed as a casting mold, **characterized in that** at least one area of the casting mold (10) which comes into contact with the reactive nonferrous molten metal is made of yttrium oxide, magnesium oxide and calcium oxide.
2. Tool as defined in claim 1, **characterized in that** at least one mold wall area of the casting mold (10) which comes into contact with the reactive nonferrous molten metal is made of yttrium oxide, magnesium oxide and calcium oxide.
3. Tool as defined in claim 1 or 2, **characterized in that** the casting mold has a construction of at least two layers wherein a first layer (14) forms a mold wall area which comes into contact with the reactive nonferrous molten metal and a second layer (15) forms a backfilling stabilization area for the mold wall area.
4. Tool as defined in claim 3, **characterized in that** both the first layer (14) and the second layer (15) consist of yttrium oxide, magnesium oxide and calcium oxide wherein the second layer (15) which backfills the first layer (14) has less yttrium oxide and is more coarsely grained than the first layer.
5. Tool as defined in claim 3 or 4, **characterized thereby that** the second layer (15) has thicker walls

than the first layer (14).

6. Method for the production of a casting mold for cast components, in particular gas turbine components, from reactive nonferrous molten metals, in particular from titanium alloys, **characterized by** the following steps:

a) Provision of a component wax model which has the geometrical dimensions of the precision-casting components to be produced with the casting mold,

b) Coating of the component wax model with a slurry material consisting of water, yttrium oxide, magnesium oxide and calcium oxide,

c) Drying and hardening the coating for the casting mold,

d) Removal of the component wax model from the casting mold.

7. Method as defined in claim 6, **characterized in that**, together with step b), the slurry material is spread in multiple layers on the component wax model.

8. Method as defined in claim 7, **characterized in that** the slurry material is spread in multiple layers on the component wax model in such a way that a casting mold with at least a two-layer construction is created wherein a first layer of the casting mold forms a mold wall area which comes into contact with the reactive nonferrous molten metal, and a second layer of the casting mold forms a stabilization area

which backfills the mold wall area.

- 5           9. Method as defined in claim 8, **characterized in that**  
the first layer of the casting mold is formed by  
spreading one or more layers of a slurry material  
consisting of water, yttrium oxide, magnesium oxide  
and calcium oxide on the component wax model, and  
that the second layer is formed by spreading one or  
10           more layers of a slurry material consisting of water,  
yttrium oxide, magnesium oxide and calcium oxide on  
the first layer.
- 15           10. Method as defined in claim 9, **characterized in that**  
the slurry material for formation of the second layer  
which backfills the first layer has less yttrium  
oxide and is more coarsely grained than the slurry  
material for formation of the first layer.
- 20           11. Method for the production of a cast component, in  
particular a gas turbine component, from reactive  
nonferrous molten metals, in particular from titanium  
alloys, **characterized by** the following steps:
- 25           a) Provision of a casting mold as defined in one or  
more of claims 6 to 10,
- 30           b) Filling the nonferrous molten metal into the  
casting mold,
- 35           c) Solidification of the nonferrous molten metal in  
the casting mold,
- d) Removal of the cast component from the casting  
mold.

12. Method as defined in claim 11, **characterized in that** a titanium aluminum molten alloy is filled into the casting mold to produce a gas turbine component.